

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
Section 2.1 Introduction						
				No comments		
Section 2.2 Remedial Action Objectives						
1	DEQ	Section 2.2, RAO 3 - Surface Water	Risk Ranges	This RAO does not exactly match RAO 3 stated in Table 2.2-7. The table refers to a risk range, but uses only 1E-6.	This RAO is intended to address cumulative risk and so the range from 1E-4 to 1E-6 is stated in the RAO text in Table 2.2-7. PRGs have been established at the 1E-6 cancer risk level. It is anticipated that using these values will result in a cumulative cancer risk within the acceptable risk range. A column will be added to Table 2.2-7 to distinguish those values based on 1E-6 cancer risk and those values based on non-cancer risk.	
2	DEQ	Section 2.2, RAO 3 - Surface Water	Editorial	The beneficial use phrase should be covered by the comply with identified ARARs statement. Revise text as shown below: Reduce risks from COCs in surface water at the Site to acceptable exposure levels that are protective of human health risks from ingestion of, inhalation of, and dermal contact with surface water; protect the drinking water beneficial use of the Willamette River at the Site; and comply with identified ARARs.	Agreed. The text will be revised as shown based on a review of Table 2.2-3a (Chemical-Specific ARARs). This table cites “Water Pollution Control Act ORS 468B.048. Water Quality Standards OAR Part 340, Division 41” as an ARAR and states, “OAR 340-041-0340 designates and defines the beneficial uses that shall be protected in the Willamette Basin.”	
3	DEQ	Section 2.2, RAO 4 - Groundwater	Risk Ranges	This RAO does not exactly match RAO 4 stated in Table 2.2-8. The table refers to a risk range, but uses only 1E-6.	See response to Comment No. 1.	
4	DEQ	Section 2.2, RAO 4 - Groundwater	Consumption Pathway	The values in Table 2.2-13 do not reflect the fish and shellfish consumption endpoint.	The fish and shellfish consumption endpoint is addressed through the use of Ambient Water Quality Criteria (AWQC) values; discharge of a groundwater plume above the AWQC concentrations will not be allowed.	
5	Five Tribes	Section 2.2, RAO 6 - Biota (Prey) Ingestion	Editorial	This sentence is particularly hard to follow, but I’m assuming it would be problematic to toy with the wording of the RAOs at this point.	RAO 6 will be revised as shown below to clarify the meaning: “Eliminate, reduce, or control unacceptable risks to ecological receptors resulting from indirect exposures to COCs in sediments through consumption of prey, and comply with ARARs.”	

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Section 2.2.1 Contaminants of Concern						
6	DEQ	Section 2.2.1, first paragraph, page 2-3	COCs vs. COPCs	<p>Comment is made with respect to the following statement in the text:</p> <p>"Contaminants found to pose cancer risks greater than 1×10^{-6} or hazard quotients (HQs) greater than 1 were identified as contaminants potentially posing unacceptable risks in the BHHRA."</p> <p>In DEQ terms, these would be considered COCs, not COPCs. See also Footnote 1 where the definition of COPC does not match DEQ's definition.</p> <p>Footnote 1: "COPCs are defined as those contaminants potentially site-related and whose data are of sufficient quality for use in the quantitative risk assessment."</p>	<p>The terminology "contaminants potentially posing unacceptable risk" is consistent with the terminology used in the risk assessments.</p> <p>Section 6.3.5 of EPA's <i>A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents</i> (EPA 540-R-98-031, July 1999) defines COPCs and COCs in the following manner:</p> <p>"Chemicals of Potential Concern (COPCs): Those chemicals that are identified as a potential threat to human health or the environment and are evaluated further in the baseline risk assessment. Chemicals of Concern (COCs): A subset of the COPCs that are identified in the RI/FS as needing to be addressed by the response action proposed in the ROD."</p> <p>The footnote is a direct quote from the definition of COPCs taken from EPA's Risk Assessment Guidance for Superfund (RAGS), Volume I, Human Health Evaluation Manual, Part A, Chapter 5, Definitions for Chapter 5, page 5-2 (EPA/540/1-89/002, December 1989) and this reference will be added to the footnote.</p>	
7	Five Tribes	Section 2.2.1, second paragraph, page 2-3	COCs vs. COPCs	<p>Comment is made with respect to the following statement:</p> <p>"EPA guidance defines COCs as a subset of the contaminants of potential concern (COPCs) that are identified in the RI/FS as needing to be addressed by the response action proposed in the ROD..."</p> <p>Do COPCs need to be addressed in response action or only COCs? Suggest breaking into two sentences to clarify.</p>	<p>Only those chemicals identified as COCs need to be addressed by the action per EPA's guidance (<i>A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents</i>, EPA 540-R-98-031, July 1999). The sentence will be revised as shown below to clarify the meaning:</p> <p>"EPA guidance defines COCs as a subset of the contaminants of potential concern (COPCs). that COCs are identified in the RI/FS as needing to be addressed by the response action proposed in the ROD..."</p>	
8	Five Tribes	Section 2.2.1, second paragraph, top of page 2-4	Risk-Based Threshold vs. Risk-Based PRG	<p>Is a "risk-based threshold" the same as a "risk-based PRG" as discussed in Section 2.2.2? If not, then please define what is meant by "risk-based threshold."</p>	<p>This is a typo. The text "risk-based threshold" will be revised to "risk-based PRG."</p>	
9	Five Tribes	Section 2.2.1.1, second paragraph, page 2-4	COC - Lead	<p>According to the COC table, lead is still a COC but the text here states:</p> <p>"While antimony and lead were determined to pose unacceptable risk to humans and ecological receptors, they were eliminated as COCs because..."</p>	<p>Lead has been identified as a COC based on other ecological lines of evidence other than the single, anomalous result in smallmouth bass. The text will be revised as follows:</p> <p>"While antimony and lead were was determined to pose unacceptable risk to humans and ecological receptors, they were it was eliminated as a COCs because the risk estimates were based on a single result in smallmouth bass. These results were considered to be unrepresentative and likely the result of a lead sinker in the gut being incorporated into the chemical analysis. While lead was also detected in this sample, it was retained as a COC based on other ecological lines of evidence."</p>	

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10	Five Tribes	Section 2.2.1.1, third paragraph, page 2-4	Editorial	The "Weak Lines of Evidence" list doesn't match with the COC table.	The text will be revised to reflect the following: "These include 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 4-methylphenol, aluminum, ammonia, aniline, barium, benzyl alcohol, beryllium, chloroethane, cobalt, diazinon, dibutyl phthalate, diesel range organics, endrin, endrin ketone, heptachlor epoxide, iron, isopropylbenzene, magnesium, monobutyltin, nickel, and phenol, potassium, sodium, TPH C4-C6 aliphatics, TPH C6-C8 aliphatics, and TPH C8-C10 aromatics."	
11	Five Tribes	Section 2.2.1.1, "Total DDD, DDE and DDT" bullet, page 2-5	Editorial	Not clear as to meaning of "individual sums." Was it the sum of the individual risks? Should the word "concentrations" be used instead of "sums"?	The text will be revised as follows for clarity: "While the BHHRA evaluated risk to human health based on the individual sums of 2,4- and 4,4-DDD, sum of 2,4- and 4,4-DDE, and the sum of 2,4- and 4,4-DDT, these contaminants were grouped together for PRG development purposes because..."	
12	Five Tribes	Section 2.2.1.1, "Beta and delta-hexachlorocyclohexane" bullet, page 2-5	Editorial	Comment is made with respect to the statement "...were eliminated as COCs because they are represented by gamma-hexachlorocyclohexane (Lindane) as they are isomers of Lindane and <u>were not found to pose risk in the BHHRA or BERA.</u> " Isn't this the primary reason for eliminating them? At that point, isn't it irrelevant that they are isomers of Lindane?	The text erroneously identifies beta and delta-hexachlorocyclohexane as isomers of Lindane. The text will be revised as follows: "Beta and delta-hexachlorocyclohexane (HCH) were eliminated as COCs because they are co-located with gamma-hexachlorocyclohexane (Lindane)."	
13	DEQ	Section 2.2.1.2, second paragraph (Risk-Based COCs), page 2-5	Editorial	It seems like RAO 4 should also be mentioned in the following sentence: "Risk-based human health COCs were identified in beach material and in-water sediment (RAO 1 – direct contact), fish tissue (RAO 2 – fish and shellfish consumption), and surface water (RAO 3 – drinking water)."	The basis for the selection of all groundwater COCs (i.e., RAO 4) is "source-based" as shown in Table 2.2-2 and not "risk-based."	
14	DEQ	Section 2.2.1.2, third paragraph (Media-Based COCs), page 2-5	Pore Water	The following sentence should be expanded to pore-water as this is part of the exposure to food web and bioaccumulation in fish tissue. "For human health RAO 2, the exposure route is consumption of fish which are exposed to contaminated surface water and sediment."	Note that pore water is not defined in the regulations as a separate media. However, a footnote will be placed in the "Risk-Based COCs" subsection where the term pore water is first used providing a definition for pore water for purposes of this FS (i.e., interstitial water of bulk sediment within the biologically active zone).	
15	DEQ	Section 2.2.1.2, fourth paragraph (Source-Based COCs), page 2-6	Source-Based COCs for TZW & Groundwater	With regard to source-based COCs, the most proximal contaminant source for TZW and surface water is contaminated sediment. To be protective, the FS needs to include this source and not limit the concern to upland sources.	EPA agrees that the nearest contaminant source for TZW and surface water is contaminated sediment. However, the intent of this section is to classify the COCs into the three categories used to provide the rationale for identification of chemicals as COCs. Sufficient sediment samples were collected for RI/FS decision-making purposes to characterize sediments and identify risks posed by the COCs through the risk assessments as shown by the "R" symbol on Table 2.2-2. However, TZW was sampled proximal to all suspected sources and many of the contaminants associated with upland sources (e.g., groundwater plumes) were not evaluated in the risk assessments. Further, there may not have been a sufficient number of samples collected in TZW to properly	

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					evaluate these contaminants and so selection of these COCs in the FS is based on information obtained from upland investigations where it is presumed there is a risk in the river due to migration.	
16	Five Tribes	Section 2.2.1.2, fourth paragraph (Source-Based COCs), page 2-6	Editorial	With respect to the last sentence in this paragraph, the discussion of assuming an engineered cap in groundwater plume areas seems a bit out of place. Is this the best place to discuss this?	The paragraph will be revised to remove this sentence and the assumption to use an engineered cap in groundwater plume areas will be discussed in FS Section 3.	
Section 2.2.2 Risk-Based PRGs						
17	DEQ	Section 2.2.2, General RAO 6 Wildlife	Wildlife PRG Methodology	It appears that wildlife sediment PRGs were developed using a BSAF and the human health sediment PRGs for some chemicals were developed using the food web model. Wildlife and human health PRGs based on biota uptake from sediment should be based on the same methodology.	EPA will be re-evaluating the wildlife sediment PRGs using the food web model for applicable chemicals (i.e., organo-chlorine compounds) consistent with the human health PRG development process.	
18	DEQ	Section 2.2.2, General	Food Web Model Review	DEQ understands that EPA has to date not approved the food web model. Since the description of the food web model, Appendix B, was provided for review on August 18th, DEQ has not had a chance to complete our review and confirm that comments provided on the Bioaccumulation Modeling Report, July 21, 2009 have been adequately addressed. Should EPA continue to utilize the food web model for PRG development, we would like to discuss how best to coordinate our review given limited resources.	EPA informed the LWG on 11/19 that we had officially approved the FWM as provided in 2009.	
19	DEQ	Section 2.2.2, General	Wildlife PRG Methodology	Since many of the wildlife PRGs do not match either the 2009 PRG document or the LWG FS, references are needed before DEQ can complete our review of the methodology. For example, DEQ has had ongoing conversations with EPA on the avian methodology and understands the approach, however, the specific input parameters are needed (e.g. assumptions on organic carbon, lipid content used for the back calculation, and specifics on the acceptable tissue level derivation). DEQ requests that more detail on the wildlife PRG development be provided such as equations and tables that summarize the methodology and input parameters similar to the human health Appendix A1 so that we can complete our review.	EPA will revise Appendix B2 (formerly Appendix A2) to include more details on methodology and input parameters as requested.	
20	Five Tribes	Section 2.2.2, first paragraph, page 2-6	PRG vs. RG	It would be helpful to note here or elsewhere at what point PRGs become RGs and, in basic terms, how RGs are selected.	PRGs become RGs in the Record of Decision (ROD) as noted in EPA’s <i>Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents</i> (EPA 540-R-98-031, July 1999), Chapter 3, page 3-14 (Part F). EPA is not including this information in the FS as the FS does not describe the superfund process, but only provides an analysis of the information.	
21	Five Tribes	Section 2.2.2, first paragraph, page 2-6	PRG Development Process	Comment is made with respect to the following text, "PRGs are established, <u>in part</u> , based on the risk-based PRGs developed from the baseline risk assessments for each medium of concern..." Meaning of “in part” is not clear. What are the other parts? I think you need something preceding this section that explains the relation of risk-based PRGs, ARARs, background concentrations, and the resulting PRG list.	The text will be modified to provide further explanation of the relationship between risk-based PRGs, ARARs, the selected PRGs, and background.	

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22	DEQ	Section 2.2.2, second paragraph, page 2-6	Food Web Model	With regard to the statement in the second sentence of the second paragraph that states "...for protection of aquatic life and people..." DEQ notes that the FWM model was not used to develop PRGs protective of aquatic life. See DEQ general comments.	EPA will be re-evaluating the ecological sediment PRGs using the food web model where appropriate.	
23	Five Tribes	Section 2.2.2, second paragraph, page 2-6	Editorial	Comment is made with respect to the following statement, "This model is also being used to establish sediment risk-based PRGs for protection of aquatic life and people that may catch and consume fish and shellfish from the lower Willamette River in the BHHRA." Wouldn't the establishment of PRGs for the protection of aquatic life be relevant to the BERA, not the BHHRA? The sentence is confusing as written.	The sentence will be revised as follows: "This model is also being used to establish sediment risk-based PRGs for protection of aquatic life and people that may catch and consume fish and shellfish from the lower Willamette River in the BHHRA."	
24	Five Tribes	Section 2.2.2, second paragraph, page 2-6	PRG Methodology	Comment is made with respect to the following statement, "In addition to the FWM approach, biota-sediment accumulation factors (BSAFs) and biota-sediment accumulation regressions (BSARs) were also used for some contaminants in development of risk-based PRGs." An explanation needs to be added as to the process by which FWM, BSAF, or BSAR was selected for calculation of PRG.	This information is found in Appendices B and C. References to these appendices will be placed in the text. Note that the FWM is only be used for organic, chlorinated, persistent compounds such as PCBs, dioxins/furans, and DDx. It is not being used to develop risk-based PRGs for non-organics like metals. BSAFs are used for inorganics as described in the appendices.	
25	DEQ and Five Tribes	Section 2.2.2.1 Human Health PRGs, page 2-7	Target Levels vs. PRGs	With respect to the use of the term "Target Levels," the relationship between PRGs and target levels needs clarification, along with why targets levels are needed and how they will be applied.	After consulting EPA guidance, EPA has decided to refer to these as PRGs and has revised the text and tables accordingly.	
26	DEQ	Section 2.2.2.1 Human Health PRGs, first paragraph, page 2-7	Editorial	Revise sentence as follows: "The BHHRA evaluated exposures and associated risks and hazards to dockside workers; in-water workers; transients; recreational beach users; tribal, recreational, and subsistence fishers; divers; domestic water users; and infants consuming breast milk from mothers who eat resident fish."	The sentence will be revised as recommended.	
27	Five Tribes	Section 2.2.2.1 Human Health PRGs, first paragraph, page 2-7	PRG Methodology	Were the PRGs calculated based on the RME or CT? Please clarify.	Additional text will be added to this paragraph stating that PRGs were calculated using RME.	
28	DEQ and Five Tribes	Section 2.2.2.1 Human Health PRGs, second paragraph, page 2-7	Target Risk Levels	The text identified below may be old because the current table only addresses HW=1 and 1E-6, not 1E-4. "Risk-based PRGs are calculated using three target risk levels, two of which account for the acceptable range of carcinogenic effects (10 ⁻⁶ and 10 ⁻⁴) and the third to assess non-cancer hazards at an HQ of 1."	As noted in the response to Comment No. 1, risk-based PRGs were established at the 1E-6 cancer risk level. It is anticipated that using these values will result in a cumulative cancer risk within the acceptable risk range (1E-4 to 1E-6).	
29	Five Tribes	Section 2.2.2.1 Human Health PRGs, third paragraph, page 2-7	Risk-Based PRGs Development	With respect to the statement, "...risk-based PRGs were able to be developed for both RAO 1 beach sediment COCs, all four RAO 1 sediment COCs, and eight of the 13 sediment COCs for RAO 2"; why were risk-based PRGs not calculated for some COCs? Is this anticipated to be a substantial data gap?	Risk-based PRGs were not able to be developed for PBDE due to the lack of relationship between fish tissue concentrations and sediment concentrations. This is not a data gap and BEHP is anticipated to be addressed by other COCs. However, BEHP would be included in a long-term fish monitoring program, as appropriate, to ensure the remedy is protective. PRGs will be developed for the other 12 COCs for RAO 2.	

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30	Five Tribes	Section 2.2.2.1 Human Health PRGs, fourth paragraph, page 2-7	Editorial	Do the "target tissue levels" referenced in the first sentence apply only to fish and shellfish, just fish, or something else?	It was developed for fish due to the higher consumption rates but will also be protective of shellfish consumption.	
31	Five Tribes	Section 2.2.2.1 Human Health PRGs, fifth paragraph, top of page 2-8	Editorial	Add a citation for the State of Oregon ambient water quality criteria for protection of human health consumption of organisms.	A citation will be added as follows: "Target concentrations in surface water for RAO 2 are the State of Oregon ambient water quality criteria for protection of human health consumption of organisms (OAR 340-041-0033 , Table 40).	
32	Five Tribes	Section 2.2.2.2 Ecological PRGs, second paragraph, page 2-8	Editorial	With respect to the last sentence of this paragraph, what's meant by "ecological risk-based selection process." That doesn't seem to be an accurate description of the contents of Appendix A, Section 2.	The sentence will be modified as follows: "The ecological risk-based PRG development selection process for each medium of concern is detailed in Appendix B2. " EPA will by revising Appendix B2 (formerly Appendix A2) to include more details on methodology and input parameters for PRG development as discussed in Comment No. 19.	
33	DEQ	Section 2.2.2.2 Ecological PRGs, last paragraph in section, page 2-9	Sediment Toxicity Test	With respect to the following statement: "Survival/biomass and statistical significance tests must both fail before an individual sample is considered to have exceeded a risk-based PRG." This notation states that both have to fail. DEQ does not agree that both tests must fail before action is required. We can see possibly not wanting to take action on biomass only, but believe that action is warranted when there is a failure for survival.	It appears the statement in the text is being misinterpreted. In order for an individual sample to be considered to have exceeded a risk-based PRG the following must occur: <div>1. Survival <u>or</u> biomass values lower than the identified applicable percentages And</div> <div>2. The survival or biomass must also be statistically significantly reduced from the laboratory negative control sediment survival or biomass</div> A sample can fail just biomass and if it is statistically significantly below the laboratory control biomass, then the sample will have failed the two tests noted in Items 1 and 2 above. The text will be revised to add "or" instead of a slash between survival/biomass to clarify this distinction.	
Section 2.2.3 ARARs						
34	Five Tribes	Section 2.2.3, first paragraph, page 2-10	Editorial	This is confusing because ARARs are being used as PRGs where risk-based values are not available as indicated in Table 2.2-14. Should this table in fact refer to "potential ARARs" since "final ARAR determinations for the selected remedy will be made in the ROD"?	ARARs presented in the FS or proposed plan are potential until the ROD is signed. No additional language was added.	
35	Five Tribes	Section 2.2.3, second paragraph, page 2-10	Editorial	Should there be an additional sentence here explaining that the waiver criteria are explained in Section 2.2.3.2? Why not include the waiver criteria here?	The text will be revised to refer the reader to Section 2.2.3.2.	
36	Five Tribes	Section 2.2.3.1 Portland Harbor ARARs, first paragraph, page 2-11	Editorial	Does ARAR here need to be qualified as "potential" given statement regarding ARARs and ROD above?	See the response to Comment No. 34.	

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37	DEQ	Section 2.2.3.1, first paragraph under Chemical-Specific ARARs, page 2-11	Oregon ARARs	<p>The following comments are made with respect to the following statement:</p> <p>"Although there are no promulgated federal or Oregon ARARs providing numerical standards for contaminants in sediment, both federal and Oregon standards and criteria are available for surface water and groundwater."</p> <p>Later in this section it is stated that DEQ acceptable risk levels are ARARs. It should be clarified that this sentence is limited to stating that DEQ does not have a table of sediment standards.</p> <p>The table provided by Deb lists Oregon acceptable risk levels as chemical specific which is consistent with what DEQ has communicated to EPA several years ago, and is consistent with past determinations by DEQ. This sentence seems to be inconsistent with later paragraphs in this section with implies that Oregon's acceptable risk levels are chemical specific ARARs. Also, what about TPH, which is covered under Oregon cleanup law but excluded from CERCLA?</p>	<p>The text will be revised as follows for clarity:</p> <p>"Although there are no promulgated federal or Oregon ARARs providing numerical standards for contaminants in sediment, both federal and Oregon standards and criteria are available for surface water and groundwater. While Oregon does not have numeric sediment standards, Oregon has established acceptable risk levels for human and ecological receptors as described below."</p> <p>TPH is not excluded from CERCLA because when petroleum products become mixed with hazardous substances they become hazardous substances as occurs at the bottom of a river. Petroleum products are being considered in this FS as indicated in the Portland Harbor AOC where it is stated that the RI/FS will be consistent with the Oil Pollution Act of 1990.</p>	
38	Five Tribes	Section 2.2.3.1, second paragraph under Chemical-Specific ARARs, page 2-11	Editorial	<p>Comment is made with respect to the following statement: "If there was no Oregon numeric WQS and there was a NRWQC, comparisons were made to the NRWQC."</p> <p>I don't understand this. I thought the comparison was between NRWQC and Oregon WQS. What is the comparison if there's no WQS?</p>	<p>For clarification, the text was modified as follows:</p> <p>"If there was no Oregon numeric AWQC and there was a NRWQC, PRG selection comparisons (i.e., risk-based PRG values versus ARAR values) were made to the NRWQC."</p> <p>If there is a state AWQC and/or national NRWQC, then the more stringent value is compared to the risk-based PRG. If there is no water quality criterion (national or state) then the risk-based concentration remains the PRG.</p>	
39	DEQ	Section 2.2.3.1, Chemical-Specific ARARs, fourth bullet at bottom of page 2-12	Editorial	<p>Just so we are clear, "COC" in the case below can mean a group of chemicals acting in the same manner – e.g. Total PAHs, dioxin TEQ, etc.</p> <p>"• For populations of ecological receptors, a 10 percent or less chance that more than 20 percent of the total local population will be exposed to an exposure point value greater than the ecological benchmark value for <u>each COC</u> and no other observed significant adverse effects on the health or viability of the local population"</p>	<p>A COC can mean individual chemicals or groups of chemicals such as PAHs.</p>	

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40	Five Tribes	Section 2.2.3.1, Location-Specific ARARs subsection, second paragraph, page 2-13	Editorial	<p>Recommend the following revisions:</p> <p>"Section 7 of the Endangered Species Act (ESA), 16 USC 1536(a)(2), requires that actions authorized by federal agencies may not jeopardize the continued existence of endangered or threatened species or destroy or adversely modify critical habitat without appropriate mitigation measures."</p> <p>Mitigation may ensure against jeopardy or destruction/adverse modification, but as this sentence currently reads it appears you may do one of the above as long as there is appropriate mitigation.</p>	<p>The text will be revised as follows:</p> <p>“Section 7 of the Endangered Species Act (ESA), 16 USC 1536(a)(2), requires that actions authorized by federal agencies may not jeopardize the continued existence of endangered or threatened species or destroy or adversely modify critical habitat without appropriate mitigation measures. Agencies are to avoid jeopardy when possible and use all reasonable conservation measures. When that is not possible, agencies will take appropriate mitigation measures to avoid jeopardy.”</p>	
41	Five Tribes	Section 2.2.3.2, last paragraph of section, page 2-15	TI Waiver	<p>Comment is made with respect to the following statement, "...a TI evaluation is not included in this FS since this FS is not evaluating groundwater remedial actions."</p> <p>I’m confused about the implications of the TI guidance. Because the guidance is specific to groundwater, would it not be applied to this site at a later date? Is the TI waiver (#3 above) still relevant to this site? Is the TI guidance relevant? If you feel this paragraph is necessary, you may want to clarify that a TI waiver could still be granted, despite the lack of groundwater remedial action, if that’s the case.</p>	<p>Text will be revised as follows:</p> <p>“EPA OSWER Publication 9234.2-03/FS guidance entitled, <i>Overview of ARARs, Focus on ARAR Waivers</i> The EPA Office of Solid Waste and Emergency Response (OSWER) Directive 9234.2-25 guidance entitled, <i>Guidance for Evaluating the Technical Impracticability of Ground Water Restoration</i> (EPA 1989), although specific to groundwater, describes the basis for the six ARAR waivers including technical impracticability is the primary guidance for technical impracticability (TI) waivers (TI guidance). Although the TI guidance indicates that the TI evaluation may be included in the RI/FS, a TI evaluation is not included in this FS since this FS is not evaluating groundwater remedial actions.”</p>	
Section 2.2.4 Development of Preliminary Remediation Goals						
42	DEQ	General	Background and Organic Carbon	<p>The current EPA PRGs do not account for background. DEQ understands that EPA has decided to include background values in the revision to the PRG table. If organic carbon corrected values are to be used for background, DEQ requests the following text be included.</p> <p>“On average, organic carbon content of sediment in the study area is about 50 percent higher than in upstream sediment used to develop background. As a simple means of incorporating organic carbon differences in the development of background concentrations, an organic carbon correction method was used, rather than using dry-weight sediment concentrations or organic-carbon normalized sediment concentrations. The correction approach is an approximation, and will best match results using organic-carbon normalization when there is not wide variation in both site sediment organic carbon content, and background sediment organic carbon content.”</p>	<p>EPA’s ProUCL Technical Guidance (EPA/600/R-07/041, September 2013) indicates that “cleanup decisions need to be made based upon values in the raw scale and not in log-scale or some other transformed space.” Based on guidance, carbon normalization will not be used.</p>	

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43	Five Tribes	General	PRGs Development Process	I'm surprised to see a section here with the title, "Development of Preliminary Remediation Goals." Isn't this what we have been doing in 2.2.2? I see that this section describes how the risk-based PRGs and ARARs are merged to generate the final set of PRGs. I would suggest something earlier on that describes a high-level perspective of the development of PRGs and lays out the organization of the remainder of the discussion of the same. This new high-level discussion might precede Section 2.2.2.	As discussed in Comment No. 21, the text of Section 2.2.2 will be modified to provide further explanation of the relationship between risk-based PRGs, target values, ARARs, and the selected PRGs.	
44	Yakama	Section 2.2.4	Editorial	The text in a number of the RAO descriptions states that the goal is to achieve HQs "equal to one." However, the BERA identifies substances with HQs equal to one as posing unacceptable risk. These two seem to be inconsistent and should be clarified.	HQs "equal to one" is the acceptable risk level.	
45	Five Tribes	Section 2.2.4, second paragraph, page 2-15	PRG Development Process	I find the terminology "risk-based PRG" confusing if it is then superseded by the chemical ARAR or background to become a PRG. But if this is standard terminology, I can accept it.	As noted in Comment No. 21, the text will be modified to provide further explanation of the relationship between risk-based PRGs, ARARs, the selected PRGs, and background.	
46	Five Tribes	Section 2.2.4, second paragraph, page 2-15	Editorial	With respect to the statement, "Because RAOs for the Portland Harbor Site include reductions in <u>tissue concentrations</u> ..." does the term tissue refer to fish/shellfish tissue? Please be clear as to meaning of tissue.	The term refers to both fish and shellfish as evaluated in the risk assessment.	
47	Five Tribes	Section 2.2.4, second paragraph, page 2-15	PRG Methodology	The following sentence is awkward: "Because RAOs for the Portland Harbor Site include reductions in tissue concentrations, sediment/water-to-tissue relationships developed based on the results of a site-specific food web model or BSAFs have been used to develop PRGs." Suggest the sentence be revised to, "Because RAOs for the Portland Harbor Site include the goal to reduce chemical concentrations in fish and other wildlife,..." Weren't BSAR values used as well as stated in Section 2.2.2? Please describe the decision process for using food web model, BSAR, or BSAF.	The text will be revised as follows: "Because RAOs for the Portland Harbor Site include reducing risks from exposure to COCs due to consumption of fish and shellfish, sediment/water-to-tissue relationships were used to develop sediment PRGs." The decision process is described in Bioaccumulation Modeling Report.	
48	Five Tribes	Section 2.2.4, third paragraph, page 2-15	Editorial	With respect to the statement, "All PRGs selected for each COC are based on achieving a target cancer risk level of 10 ⁻⁶ ", were there ARARs for sediment? If not, then say so.	Text will be revised as shown below: "All PRGs selected for each COC are based on achieving a target cancer risk level of 10 ⁻⁶ as there are no chemical specific ARAR standards for sediment. "	
49	DEQ	Section 2.2.4, third paragraph, page 2-15	Editorial	With respect to the last sentence in this paragraph, DEQ's interpretation of this statement is that there are two carcinogens in beach sediment, so if each chemical is cleaned up to 1E-6, then the cumulative risk is 2E-6. There are four carcinogens in river sediment, so the cumulative risk is 4E-6. The text should clarify this. "If all chemicals were remediated to their PRG levels, the cumulative cancer risk level for beach exposure would be 2 x 10 ⁻⁶ and sediment exposure would be 4 x 10 ⁻⁶ ."	All statements within this section related to cumulative risk will be deleted.	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
50	Five Tribes	Section 2.2.4, third paragraph, page 2-15	Cumulative Cancer Risks	<p>Comment is made with respect to the following statement:</p> <p>"The cumulative cancer risk level for beach exposure is 2×10^{-6} and sediment exposure is 4×10^{-6}."</p> <p>How are these cumulative cancer risks used within the FS? Please add discussion of relevance or consider removing from text.</p>	As noted in the response to Comment No. 49, all statements within this section related to cumulative risk will be deleted.	
51	DEQ	Section 2.2.4, first paragraph on page 2-16	Pore Water	<p>Consider including porewater in the following statement:</p> <p>"RAO 2 addresses reducing human health risks from indirect exposures to COCs through ingestion of fish and shellfish that occur via bioaccumulation pathways from sediment and/or surface water."</p>	See response to Comment No. 14.	
52	DEQ	Section 2.2.4, first bullet on page 2-16	Oregon ARARs	<p>Acknowledge that Oregon acceptable risk levels are equivalent to EPA's RSLs with respect to the following statement:</p> <p>"• For fish tissue (fillets), <u>no chemical-specific ARAR values</u> were identified through the ARAR process."</p>	<p>The text will be revised as shown below:</p> <p>"For fish tissue, no chemical-specific ARAR values were identified through the ARAR process except the Oregon acceptable risk levels."</p>	
53	DEQ	Section 2.2.4, first bullet on page 2-16	Oregon ARARs - Cumulative Risk	<p>The comment below is made with respect to the following text:</p> <p>"The cumulative cancer risk for fish tissue (fillets) is 8×10^{-6} and the non-cancer hazard indices is <u>four</u>."</p> <p>This result highlights a disagreement DEQ has with the simple application of PRGs. Because we don't have numerical sediment standards, the ARAR is the acceptable risk level. For noncarcinogens, that is an HQ of 1 and an HI of 1. So a cumulative HI of 4 is not acceptable. This involves a two-step process (set PRGs at HQ = 1, and then confirm that HI =1), but that's what DEQ does at DEQ sites to meet our rule requirements (the ARAR). We acknowledge that if a key chemical is remediated to HQ=1, it may substantially reduce other chemical concentrations so that HI is less than 4. Still, it is likely that HI will be greater than 1 unless all chemicals are remediated to below (not at) their PRGs. Also, we need to consider that HI should be based on similar toxic endpoints.</p> <p>DEQ recommends the following revisions:</p> <p>"If all chemicals were remediated to their PRGs, the cumulative cancer risk for fish tissue (fillets) would be 8×10^{-6} and the non-cancer hazard indices would be four. An additional evaluation would be needed to show that the hazard index (for chemicals with similar toxic endpoints) meets the acceptable risk level of 1."</p>	As noted in the response to Comment No. 49, all statements within this section related to cumulative risk will be deleted.	
54	Five Tribes	Section 2.2.4, second bullet on page 2-16	Risk-Based Threshold vs. Risk-Based PRG	What is meant by "threshold" in this bullet? Is this the same as a PRG?	The term "threshold" will be replaced with the term "PRG."	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
55	DEQ	Section 2.2.4, second bullet on page 2-16	Oregon ARARs - Cumulative Risk	<p>The comment below is made with respect to the following text:</p> <p>"The cumulative risk for surface water is 2×10^{-5}."</p> <p>See previous comment on HI. There is a similar situation with carcinogens, that DEQ ARAR requires $1E-6$ for individual carcinogens, and $1E-5$ for cumulative risk. Again, this is a two-step process. It is unlikely that an area will have 20 carcinogens all at $1E-6$ that will result in an unacceptable cumulative risk. But the acceptable level for cumulative risk is an ARAR.</p> <p>DEQ recommends the following revisions:</p> <p>"If all chemicals were remediated to their PRGs, the cumulative risk for surface water would be 2×10^{-5}. An additional evaluation would be needed to show that the state ARAR acceptable cumulative risk level of 1×10^{-5} is met."</p>	As noted in the response to Comment No. 49, all statements within this section related to cumulative risk will be deleted.	
56	Five Tribes	Section 2.2.4, second bullet on page 2-16	Risk Level	<p>The reference to 10^{-5} risk level is confusing in the following statement, given that Table 2.2-6 says 10^{-4}:</p> <p>"...which are established at the 10^{-6} cancer risk levels, except arsenic which is established at the <u>10^{-5} risk level</u>."</p>	The 10^{-5} risk level noted in the text is correct. Footnote 3 in Table 2.2-6 will be revised to note the "organism only" criterion is based on a risk level of 1×10^{-5} .	
57	DEQ	Section 2.2.4, third bullet on page 2-16	Oregon ARARs - Cumulative Risk	<p>With respect to the statement, "...no chemical-specific ARAR values were identified through the ARAR process" acknowledge the Oregon acceptable risk levels as noted in an earlier comment.</p> <p>DEQ recommends the following revisions:</p> <p>"If all chemicals were remediated to their PRGs, the cumulative cancer risk for sediment would be 9×10^{-6} and the non-cancer hazard indexes would be two. An additional evaluation would be needed to show that the hazard index (for chemicals with similar toxic endpoints) meets the acceptable risk level of 1."</p>	As noted in the response to Comment No. 49, all statements within this section related to cumulative risk will be deleted.	
58	Five Tribes	Section 2.2.4, RAO 3 paragraph on page 2-16	Consumption Pathway	Is this a drinking water MCL? Please clarify and cite regulations.	<p>MCLs are defined in Section 2.2.3.1, in the "Chemical-Specific ARARs" subsection. For clarity, a citation will be added to the sentence in Section 2.2.4 as shown below:</p> <p>"PRGs were established at the MCL (Safe Drinking Water Act 42 USC 300f; 40 CFR Part 141, 143), where available."</p>	
59	DEQ	Section 2.2.4, RAO 4 paragraph on page 2-16	PRGs based on Tap Water ARARs	<p>With respect to the statement, "PRGs were established at the MCL, where available," MCLs and tap water PRGs do not address the fish/shellfish consumption pathway.</p> <p>With respect to the statement, "If an MCL was not available, the PRG was established at the <u>tap water</u> regional screening level...", see DEQ's comments related to tap water PRGs in Table 2.2-13.</p>	EPA does not believe that concentrations of contaminants at MCLs or tap water RSLs in groundwater as measured in pore water would be appreciable to constitute unacceptable risk from humans consuming fish/shellfish.	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
60	DEQ	Section 2.2.4, RAO 5 first paragraph on page 2-17	Oregon ARARs	As discussed in earlier comments, acknowledge Oregon ARARs where the statement is made, "No sediment-related ARAR chemical values were identified through the ARAR process for Portland Harbor."	The text will be revised consistent with the response to Comments No. 37 and No. 52.	
61	Five Tribes	Section 2.2.4, RAO 5 first paragraph on page 2-17	Risk-Based Threshold vs. Risk-Based PRG	Same comment as above about the meaning of the term “threshold” and relation to “PRG”. I believe in this instance this is the same as “risk-based PRG” as discussed in Section 2.2.2.	The text will be revised to replace “threshold” with “PRG.”	
62	Five Tribes	Section 2.2.4, RAO 5 first paragraph on page 2-17	Editorial	Comment is made with respect to the following statement: "The <u>most conservative risk-based PRG</u> was selected for each COC to ensure protection of all species." Does this mean most conservative over all pathways or all species? Please clarify here.	For the species covered under this RAO, the PRGs were selected from all the risk-based PRGs developed for all species and pathways.	
63	DEQ	Section 2.2.4, RAO 5 paragraph after bullets on page 2-17	Sediment Toxicity Test	This comment is in response to the following statement: "Survival/biomass and statistical significance tests must both fail before an individual sample is considered to have exceeded a toxicity-based PRG." This notation states that both have to fail. DEQ does not agree that both tests must fail before action is required. We can see possibly not wanting to take action on biomass only, but believe that action is warranted when there is a failure for survival.	See response to Comment No. 33.	
64	Five Tribes	Section 2.2.4, RAO 5 paragraph after bullets on page 2-17	Editorial	Comment is made with respect to the following statement: "Survival/biomass and statistical significance tests must both fail before an individual sample..." Replace with “conditions must both be met”? Saying a statistical significance test must fail is confusing because I think you mean that statistical significance must be shown (i.e., could be viewed as more of a “passing” the test than failing it).	If the benthic toxicity criteria conditions are “met” then the sample demonstrates there is not toxicity. “Fail” is the correct terminology in this case given the way the criteria in the PRG are expressed. For example, one part of the benthic toxicity PRG states that the 10-day survival of <i>Chironomus dilutus</i> must <u>be greater than</u> (>) 84%. If the sample has a survival rate greater than 84% then it “passes” but if it is lower than 84% then it fails this test and exhibits toxicity.	
65	Five Tribes	Section 2.2.4, RAO 6 paragraph, page 2-17	Editorial	The text states, "The most conservative risk-based PRG was selected for each COC..." Is this most conservative over all species for which it was calculated? Please clarify.	The most conservative risk-based PRG developed for those species with complete pathways for ingestion of biota was selected for each COC.	
66	Yakama	Section 2.2.4, RAO 6 paragraph, page 2-17	DDE PRG	The text states that conservative PRGs were selected for each COC, except for DDE, but offers no explanation for why or how DDE was treated. Please explain.	This information will be added to Appendix B. The most conservative value for DDE was calculated for risk to eagle eggs with the next most conservative value being calculated for osprey eggs. However, eagles have a greater home range than osprey so a decision was made to select the osprey as a more conservative choice given its smaller home range of one river mile and therefore greater impacts from the site.	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
67	Five Tribes	Section 2.2.4, RAO 7 paragraph, page 2-17	Editorial	Comment is made with respect to the following statement: "Surface water PRGs were derived by comparing TRVs developed in the BERA against chemical-specific ARAR values." I presume that the lowest value is selected, but it doesn't say so here.	Text will be revised as shown below: Surface water PRGs were derived by comparing TRVs developed in the BERA against chemical-specific ARAR values and selecting the lowest value.	
68	Five Tribes	Section 2.2.4, RAO 7 paragraph, page 2-18	Pore Water	Comment is made with respect to the following statement: "Groundwater (i.e., pore water) PRGs were derived from the BERA TRVs as no chemical-specific ARARs were identified..." This linkage between groundwater and pore water RAOs/PRGs should be made much earlier in the document. I think this is the first time you equate the two.	Porewater is first discussed in Section 2.2.1.2. As noted in the response to Comment No. 14, a footnote will be added defining pore water for purposes of this FS.	
69	Five Tribes	Section 2.2.4, second to last paragraph of section, page 2-18	Risk-Based Threshold vs. Risk-Based PRG	Should the term "risk-based threshold" in the last sentence really be "PRG" as in Section 2.2.2?	The term "risk-based threshold" will be revised to "risk-based PRG".	
70	Five Tribes	Section 2.2.4, second to last paragraph of section, page 2-18	Background	Comment is made with respect to the following statement: "Table 2.2-14 provides a summary of the basis for the selection of each PRG (i.e., whether the PRG is based on a risk-based threshold, ARAR, or <u>background value</u>)." Background isn't factored into current PRG tables, correct? There's still some discussion of background in this section, but just enough to be confusing. Need to figure out what you want to say about background in Section 2. The concept should not slip in this far into the discussion. Should be introduced earlier (how background will eventually play in) or not at all in this section.	As noted in the response to Comment No. 42, EPA will be revising Section 2.2.4 to discuss and include background in more detail. Background will be factored into the PRG summary tables (Table 2.2-13 and 2.2-14).	
71	DEQ and Five Tribes	Section 2.2.4, last paragraph of section, page 2-18	Application of PRGs	EPA has stated that active/amended caps will be required where upland groundwater plumes discharge to the river. However, it is not clear how active caps will be incorporated into selection of response actions if PRGs 3, 4, 7, and 8 are for post-remedy performance evaluation.	PRGs developed for RAOs 3, 4, 7, and 8 will be used to evaluate the effectiveness of capping-based remedies, short-term impacts during implementation of the response action, and overall effectiveness of the remedy at reducing groundwater and surface water concentrations to risk-based criteria or to comply with ARARs.	
Section 2.3 General Response Actions						
72	DEQ	Section 2.3, first paragraph on page 2-19	FS Sediment Evaluation	The first sentence of this paragraph states, "The focus of this FS is on contaminated sediments." DEQ recommends adding the definition of sediment, which was defined in the ERA as up to ordinary high water mark. It is unclear how these "sediments" will be evaluated relative to the PRGs since in many cases the data do not exist within the LWG database.	See response to Comment No. 73 below. For purposes of the FS, we are evaluating sediments that were characterized during the Portland Harbor RI/FS. However, per agreement with DEQ the remedy will include both riverbank soils as well as sediment, where needed.	
73	DEQ	Section 2.3, first paragraph on page 2-19	Editorial	With respect to the statement, "...erosion of riverbank soils may contribute to in-water sediment contamination," the terms "in water" and "riverbank soils" should be defined. Perhaps riverbank sediment is a more appropriate term.	EPA considers any material that may be underwater at any time to be sediment.	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
74	Five Tribes	Section 2.3, Riverbank GRAs, Stability Enhancement bullet on page 2-21	Editorial	<p>Comment is made with respect to the following statement: "Maintaining R riverbank slopes of greater than 5H:1V and the use of native vegetation isare expected to be effective at preventing erosion of contaminated riverbank soils."</p> <p>Are you talking about maintaining these slopes, creating these slopes, using vegetation where these conditions are not met, or something else? Also, please add H and V whenever discussing slope to make clear that you are using run over rise instead of rise over run. This comment applies to figures/tables as well.</p>	<p>The text is discussing both creating and maintaining slopes of greater that 5H:1V. The text will be revised as follows:</p> <p>“Creating and/or maintaining R riverbank slopes of greater than 5H:1V and the use of native vegetation isare expected to be effective at preventing erosion of contaminated riverbank soils.”</p>	
75	Five Tribes	Section 2.3, Riverbank GRAs, Disposal bullet on page 2-21	Riverbank Soil Disposal	<p>Comment is made with respect to the following statement: "Disposal of contaminated riverbank soils is more suited to upland disposal than disposal in a confined CDF."</p> <p>Why is that? Regulatory or technical considerations? May want to mention in passing here.</p>	<p>In general due to the lack of water content, disposal of riverbank soils may be more suited for upland disposal than disposal in a CDF. However, the final disposition of contaminated riverbank soils will be made during remedial design.</p>	
Section 2.4 Identification and Screening of Technology Types and Process Options						
76	Five Tribes	Section 2.4, paragraph after bullets on page 2-22	Editorial	<p>The last sentence of this paragraph states: "Retained process options may still be potentially useful under appropriate conditions, subject to more detailed evaluations conducted during remedial design."</p> <p>I find this sentence confusing, especially what the word "still" refers to. Could you say that different process options for a given technology may be selected during design, based on more detailed information and a more detailed analysis?</p>	<p>One representative process is generally selected for each technology type to simplify the subsequent development and evaluation of alternatives in the FS. The representative process provides a basis for developing performance specifications during preliminary design; however, the specific process actually used to implement the remedial action at a site may not be selected until the remedial design phase.</p>	
77	Five Tribes	Section 2.4.1 General	Editorial	<p>I found parts of this section a bit difficult to follow. Dissimilar levels of detail are provided for each GRA, technology, and process option, which is not in itself a problem. However, it results in information being presented in different ways in each section, and I felt like there was a lot of jumping around within each technology section and between the process options. There also doesn’t seem to be a consistent section for the discussion of whether a specific technology or process option is determined to be feasible or was screened out. Then some process options were retained that were not even discussed (see my comment re: lagoon dewatering for an example). I don’t have an easy fix for this broad issue, but I would suggest (1) ensuring that the outline of each technology discussion is similar, (2) making better use of intro sentences for technology sections and subsections to better guide the reader’s attention, and (3) playing around with using bullets, bold text, or call-out boxes to better track the status of the process options within the text itself.</p>	<p>EPA is making revisions to this discussion to address these issues.</p>	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
78	DEQ	Section 2.4.1.2 MNR, second paragraph, page 2-25	Sediment Trap Data	<p>This comment is in response to the following statement:</p> <p>"For example, upstream surface water sampling at RM 16 found that incoming suspended sediment particle PCB concentrations range between 1.5 micrograms per kilogram (µg/kg) and <u>23.6 µg/kg</u>."</p> <p>RM 16 sed trap data were not this high for PCBs. It ranged from 3.14 to 10.6 µg/Kg.</p>	<p>EPA re-evaluated the data and determined that the detected PCB concentrations in the sediment traps near RM 16 range from 3.14 to 13 µg/kg. The text will be modified accordingly. The suspended sediment concentrations measured at this river mile range from 21 pg/L to 118 pg/L.</p>	
79	Five Tribes	Section 2.4.1.2 MNR, Sediment Deposition Rate subsection, bottom of page 2-25	Editorial	<p>Comment made with respect to the following statement:</p> <p>"As described above, the concentration of COCs in suspended sediments entering Portland Harbor is comparable to background concentrations."</p> <p>If you're referring to two paragraphs up, that's not exactly what it says. It says concentrations in sediments entering the site are lower than those at the site. Do you want to keep to the same sort of statement here?</p>	<p>This statement has been modified to "As described above, the concentration of COCs in suspended sediments entering Portland Harbor are lower than concentrations in the Study Area."</p>	
80	Yakama	Section 2.4.1.2 MNR, Sediment Deposition Rate subsection, bottom of page 2-25	MNR Criteria	<p>The selection of an estimated minimum deposition rate of at least 2.5 cm/year to determine that MNR would be effective seems arbitrary. This rate may be acceptable for screening technologies, but for the final remedy, MNR should only be selected where the estimated deposition rate would actually achieve the cleanup goal within a reasonable timeframe, i.e., a rate that would ensure that the contaminant concentrations in the mixed zone are below the relevant PRGs within a few years. The deposition rate should be site-specific, depending on the t=0 concentrations in the surface sediments, and could be fairly easily estimated using an assumed bioturbation rate.</p>	<p>EPA disagrees that the deposition rate of at least 2.5 cm/yr is arbitrary. The deposition rate is considered the minimum observable deposition rate based on the precision of the bathymetric surveys used to develop rates of deposition and erosion. However, EPA agrees that this criteria is not necessary for this screen. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.</p>	
81	Five Tribes	Section 2.4.1.2 MNR, Sediment Deposition Rate subsection, bottom of page 2-25	Editorial	<p>Comment made with respect to the following statement:</p> <p>"The evaluation of MNR assumes that MNR should be considered a potentially effective technology if the deposition rate is greater than <u>2.5 cm/year</u>."</p> <p>This is confusing because Figure 2.4-1 refers to -2.5 as deposition and +2.5 as erosion. This distinction of course becomes important in the EMNR section.</p>	<p>EPA agrees that this criteria is not necessary for this screen. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.</p>	
82	DEQ Five Tribes	Section 2.4.1.2 MNR, Sediment Deposition Rate subsection, bottom of page 2-25	MNR Criteria	<p>The last sentence of this paragraph states, "MNR is expected to be effective and implementable in areas with deposition rates greater than 2.5 cm/year." Is this in any given year or sustained over a number of years?</p> <p>Is there a more accurate way to word the last sentence of each of these paragraphs? It's not that MNR is effective and implementable if this condition is met, it's that the criterion supports the selection of MNR if the condition is met.</p>	<p>EPA agrees that this criteria is not necessary for this screen. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.</p>	

Commented [MJ1]: Eric Blischke Comment: It should be noted that the values referred to in the text are not sediment trap data but rather suspended sediment concentrations from surface water results. It might be useful to refer to both sets of data since they are complimentary.

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
83	Yakama Five Tribes	Section 2.4.1.2 MNR, Surface to Subsurface Sediment Contaminant Concentration Ratios subsection, page 2-26	MNR Criteria	Please provide the rationale for selecting subsurface to surface sediment concentration ratios less than 2 to indicate areas where MNR may not be effective. Table 2.4-2 indicates a ratio of 1, not less than 2.	EPA agrees that this criteria is not necessary for this screen. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.	
84	Yakama	Section 2.4.1.3, EMNR Evaluation Screening Criteria subsection, page 2-27	Acceptable Time Frame	This section raises the issue of defining an “acceptable time frame.” Is there a hard number that can be stated for the time frame?	There is no hard number for “acceptable time frame” and this will be determined through appropriate analysis in the FS. At this point, we are just describing when this technology would be applied. Sections 3 and 4 will evaluate where it is appropriate to apply it.	
85	Yakama	Section 2.4.1.3, EMNR Evaluation Screening Criteria subsection, page 2-27	EMNR Criteria	This section discusses the fact that EMNR relies on the deposition of clean material as the primary process. However, the deposition criterion presented is an estimated rate of +/- 2.5 cm/year, which suggests that EMNR could be screened in for an erosional area (i.e., -2.5 cm). Therefore, since deposition must be effective, it would be better to limit screening for EMNR to areas with estimated rates of 0 to 2.5 cm/year or 2.5 cm/year similar to the MNR discussion.	EPA agrees that this criteria is not necessary for this screen. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.	
86	Yakama	Section 2.4.1.4, In-Situ Treatment Evaluation Screening Criteria subsection, paragraph 3, page 2-32	GAC	Please provide a citation for selecting the granulated activated carbon GAC application rate of 3% to 5%.	The current sentence where this rate is identified will be modified to include a citation as follows: “Recent application of GAC as in-situ treatment amendment has been in the 2.5 – 5% GAC by weight range as noted in EPA’s <i>Use of Amendments for In Situ Remediation at Superfund Sediment Sites</i> document, USEPA, 2013), as a result, the evaluation of in-situ treatment in this FS will assume a GAC application rate of 2.5% to 5% GAC by weight within the biologically active zone.” Reference: USEPA. 2013. Use of Amendments for In Situ Remediation at Superfund Sediment Sites. OSWER Directive 9200.2-128FS. April 2013.	
87	Yakama	Section 2.4.1.4, In-Situ Treatment Evaluation Screening Criteria subsection, paragraph 4, page 2-32	GAC	A citation should be provided to support the assumption of 90% effectiveness of activated carbon, particularly since it would be expected that the GAC adsorption efficiency will vary among the contaminants. Further, please include citations demonstrating the GAC treatment remains effective for the long term.	Several citations to support the assumption of 90% effectiveness were identified in the previous paragraph on page 2-32 as highlighted below: “A literature review suggests that activated carbon can reduce the bioavailable fraction of PCBs, PAHs, and 4,4’- DDT as measured through porewater concentrations by 90% (Ghosh et al. 2011; Tomaszewski et al. 2008; Zimmerman et al. 2005).”	
88	Five Tribes	Section 2.4.1.4, In-Situ Treatment Evaluation Screening Criteria subsection, paragraph 5, page 2-32	Editorial	Comment is made with respect to the following statement: "As discussed above, the evaluation criteria for in-situ treatment are identical to the EMNR evaluation criteria <u>except for the target treatment concentration criterion.</u> " The PTW criterion is in the EMNR table but not the in situ one. Is this intentional? If so, should make mention of this with rationale for not including as in-situ treatment criteria.	PTW only has a threshold for treatment (in-situ or ex-situ). These tables will be modified to discuss high risk concentrations as a basis for not conducting EMNR (EMNR should only be used for lower level contaminants). In-situ treatment of PTW is a viable option if effective treatment technologies exist.	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
89	Yakama	Section 2.4.1.4, In-Situ Treatment Evaluation Screening Criteria subsection, paragraph 5, first bullet, page 2-32	In Situ Treatment Criteria	The text uses a negative (+/- 2.5 cm/year) deposition rate. See comment above.	EPA agrees that this criteria is not necessary for this screen. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.	
90	Five Tribes	Section 2.4.1.4, In-Situ Treatment Evaluation Screening Criteria subsection, all three bullets on page 2-32	Editorial	I think this would be easier to understand if you phrased each of the three bullets in terms of what would be supportive of in-situ treatment. For instance, deposition rate greater than or equal to +/- 2.5 cm/yr (or maybe that just becomes >= -2.5 (or +2.5, depending on how you’re defining erosion vs. deposition – see earlier comment in MNR section) cm/yr, not +/-), subsurface to surface sediment concentration ratio of >1, etc.	EPA agrees that this criteria is not necessary for this screen. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.	
91	Five Tribes	Section 2.4.1.4, In-Situ Treatment Evaluation Screening Criteria subsection, paragraph after bullets on page 2-32	Editorial	<p>The introduction of a new term "in situ treatment criteria" is confusing. I’m not sure if my suggested edits are exactly right, but I tried to clarify the original text.</p> <p>"Areas that are suitable for EMNR and which meet the target treatment concentration criterion in-situ treatment criteria should be considered candidates for reactive EMNR (i.e., inclusion of reactive material in thin-layer placement). In addition to these criteria that evaluate the effectiveness and implementability of in-situ treatment, there are additional physical conditions at the Portland Harbor Site where that indicate the favorability of where in-situ treatment may relative to other technologies may be favorable based on site specific conditions."</p>	<p>The treatment criteria are narrative, not numeric (see Table 2.4-4). The Text is modified to:</p> <p>“Areas that are suitable for EMNR and which meet the criteria for in-situ treatment (see Table 2.4-4) should be considered candidates for reactive EMNR (i.e., inclusion of reactive material in thin layer placement). In addition to these criteria that evaluate the effectiveness and implementability of in-situ treatment, there are additional physical conditions at the Portland Harbor site that indicate the favorability of in-situ treatment relative to other technologies.”</p>	
92	Five Tribes	Section 2.4.1.5, Containment in Place Evaluation Screening Criteria subsection, first paragraph, page 2-33	Editorial	<p>Comment is made with respect to the following statement: "If properly designed and implemented in conjunction with effective source control, capping can be applied across the Portland Harbor Site."</p> <p>This sounds like you are saying that with proper design and source control, capping could work throughout the whole site. Then I’m not sure how to interpret the rest of the paragraph – are you saying that the limitations are factors that could be overcome with proper design? This gives the impression that dredging wouldn’t be warranted if capping could be made to work anywhere. Since we end up eliminating it as an option in dredging areas, could you say something less sweeping like “...capping can effectively contain contaminated sediments” or “capping can be applied across much of...”</p>	This discussion is being revised to more accurately reflect where capping can be effective.	
93	Five Tribes	Section 2.4.1.5, Containment in Place Evaluation Screening Criteria subsection, second paragraph, page 2-34	Editorial	Figures in this paragraph should be numbered in the order in which they are discussed.	Figures 2.4-3 and 2.4-4 were first introduced in a prior section (Section 2.4.1.2 - MNR) as the figures are applicable to both Section 2.4.1.2 and Section 2.4.1.5. The numbering is correct for the overall order in which the figures are discussed.	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
94	Five Tribes	Section 2.4.1.6 Removal, bullets after first paragraph, page 2-35	Editorial	These steps seem to be for upland disposal only. Disposal options aren’t discussed until the next section. Maybe you just need to add “assuming upland disposal” to this sentence?	The proposed language would unnecessarily limit disposal options. This process does not assume only upland disposal, but any disposal options. In this discussion, a generic reference to disposal is adequate.	
95	Five Tribes	Section 2.4.1.6 Removal, fifth paragraph, bottom of page 2-35	Editorial	<p>Comment is made with respect to the following statement: "Excavation of contaminated sediment generally involves isolating the contaminated sediment from the overlying water body by pumping or diverting water from the area, and managing any continuing inflow followed by sediment excavation using conventional dry land equipment..."</p> <p>Why is mechanical dredging the representative process option when it sounds like you are planning to drain all the water and then excavate. Need to clarify this point. For instance, does “contaminated sediment” in the next sentence refer only to the most contaminated sediment (e.g., NAPL or PTW)?</p>	There is no plan to drain all the water and then excavate. This section is discussing all potential removal processes. Excavation has limited implementability since it is conducted with land equipment and therefore has accessibility restrictions (close to bank during low water conditions). Mechanical dredging was selected as the representative process option because it is more implementable and cost effective at the site. EPA will revise text to make this point more clear.	
96	DEQ	Section 2.4.1.7.1 On-Site Disposal, Effectiveness subsection, first paragraph at top of page 2-39	Editorial	With respect to the statement, " <u>Long-term effectiveness may be compromised</u> for on-site disposal options in the event of a catastrophic failure...or associated with groundwater flow," such issues can generally be addressed by O&M or contingency plans.	Language will be added to indicate that these issues can generally be addressed by O&M or contingency plans.	
97	Five Tribes	Section 2.4.1.7.1 On-Site Disposal, CDF Implementability subsection, first paragraph, page 2-39	Editorial	<p>Comment is made with respect to the following statement: "In addition, a 60% design document for the Terminal 4 CDF has already been prepared <u>suggesting</u> that construction of a CDF at the Terminal 4 location is more viable than other locations."</p> <p>Does the mere existence of the design document suggest this, or was an analysis conducted that suggests that T4 is the best location?</p>	This statement is saying that because there is a design, it is more viable. In addition, it should be noted that Terminal 4 Slip 3 is well suited to a CDF due to its off-channel location and large size. It is not suggesting that T4 is the best location; it is a reasonable location for a CDF.	
98	DEQ	Section 2.4.1.7.1 On-Site Disposal, Relative Costs subsection, bottom of page 2-39	Disposal Cost Comparison	This discussion is limited to on-site disposal facilities. Where will the FS evaluate relative total disposal costs (transport + disposal) between on- and off-site disposal?	Costs are screened in Section 3 of the FS and evaluated in detail in Section 4 of the FS.	
99	Five Tribes	Section 2.4.1.7.2 Off-Site Disposal, first paragraph after bullets on page 2-40	Editorial	<p>Comment is made with respect to the following statement: "Due to the similarity between these two regional landfills, the Columbia Ridge landfill was retained as a representative commercial upland landfill disposal option..."</p> <p>Confusing as written because it begs the question of why Columbia Ridge was selected. You provide justification several paragraphs down. Can you move that language up here or at least reference the text to follow?</p>	Discussion will be modified to more clearly describe selection process.	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
100	Five Tribes	Section 2.4.1.8 Ex-Situ Treatment, Chemical Treatment Technologies subsection, first paragraph, page 2-44	Editorial	The last sentence ("Overall, chemical treatment of contaminated sediments is generally not feasible based on effectiveness, implementability, and cost.") seems kind of out of place relative to other sections. Should this conclusion be saved for the screening evaluation section?	The discussion is being revised to clearly distinguish between the discussion of the technology and the screening of the technology.	
101	Five Tribes	Section 2.4.1.8 Ex-Situ Treatment, Acid Extraction subsection, page 2-44	Editorial	Is some of what you say about solvent extraction below also relevant to acid extraction? E.g., techniques similar to laboratory extraction, doesn't treat contaminants but simply separates them, extracted material still contains contamination? If so, you may want to point that out here. If not, you may want to call out the differences.	The process of solvent extraction is similar to acid extraction. Additional language will be added to point this out.	
102	Five Tribes	Section 2.4.1.8 Ex-Situ Treatment, Biological Technologies Description Summary subsection, page 2-46	Ex-Situ Treatment Technologies	Could you provide a little more information about these technologies? Even one more sentence might do it.	Additional information about these technologies will be included in the text.	
103	Yakama Five Tribes	Section 2.4.1.8.1, General Ex –Situ Treatment Implementability Concerns subsection, second bullet, page 2-49	Ex-Situ Treatment Technologies	<p>The text states, "To date, of the three ex-situ technologies selected for further evaluation, only stabilization/solidification has been implemented on a scale with a treatment production rate greater than 1 cubic yard/hour." This is hard to believe. For example, there are likely incineration systems that would have a higher production rate.</p> <p>It would be good to re-state the three ex-situ technologies referenced in this bullet as a reminder.</p>	This sentence has been stricken from the text.	
104	Five Tribes	Section 2.4.1.8.1 Ex-Situ Treatment, Physical Technologies Screening Evaluation subsection, third paragraph of subsection, page 2-50	Editorial	It is confusing to have this paragraph here when you do the detailed dewatering evaluation below. Move this to the dewatering section or, at a minimum, reference that section.	The dewatering evaluation has been moved to the subsection discussing evaluation of physical technology screening.	
105	Five Tribes	Section 2.4.1.8.1 Ex-Situ Treatment, Physical Technologies Screening Evaluation subsection, fourth paragraph of subsection, page 2-50	Editorial	The reference to Section 2.4.2.8 in this paragraph appears to be incorrect.	References to other sections will be corrected in the revised text.	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
106	Five Tribes	Section 2.4.1.8.1 Ex-Situ Treatment, Thermal Treatment Technologies Screening Criteria subsection, first paragraph of subsection, page 2-51	Editorial	<p>Comment made with respect to the following sentence: "However, unlike technologies that operate at even higher temperatures (e.g., incineration), thermal desorption is not effective in reducing contaminant concentrations to very low levels for contaminants with boiling points close to maximum operating temperatures."</p> <p>This sentence is confusing. Maybe revise to, "Thermal desorption operates at lower temperatures, and thus uses less energy, than other thermal treatment technologies, but it is not as effective compared to other thermal treatment technologies..."</p>	<p>This section is discussing high-temperature thermal desorption which has high energy costs. The proposed language has changed the meaning to call this a low temperature option with lower energy usage. That was not the point of the original statement. The sentence has been revised to:</p> <p>"However, the relative effectiveness of thermal desorption decreases as the operating temperatures approaches the chemical specific boiling points."</p> <p>A new discussion of incineration has been added to the text.</p>	
107	Five Tribes	Section 2.4.1.8.1 Ex-Situ Treatment, Dewatering Evaluation subsection, first paragraph in subsection, page 2-52	Editorial	<p>An opening sentence should be added that explains the context of this section (e.g., a type of ex-situ physical treatment to be used in conjunction with... Discussed briefly above; more detailed discussion here). Can move the later sentence to that effect to after the intro sentence.</p>	<p>This was discussed at the beginning of the section on ex-situ treatment.</p>	
108	Five Tribes	Section 2.4.1.8.1 Ex-Situ Treatment, Reagent Dewatering subsection, first paragraph in subsection, page 2-54	Editorial	<p>The end of this sentence below is unclear. What list earlier in the sentence are these two items a part of?</p> <p>"This technology does not remove water in the sense that passive and mechanical dewatering do; rather, reagent additive dewatering binds the water within the sediment matrix, increasing the mass of sediment relative to other dewatering technologies through both the added weight of the reagent and the added sediment, <u>immobilization of leachable contaminants (typically metals contamination), and/or enhancement of geotechnical properties.</u>"</p>	<p>The text has been revised as follows:</p> <p>"This technology removes water by adding a reagent to the bulk sediment that binds with the contaminants in the water within the sediment matrix to immobilize the leachable contaminants (typically metals) and/or enhance geotechnical properties of the sediment. This process increases the mass of sediment due to the addition of the reagent mass."</p>	
109	Five Tribes	Section 2.4.1.8.1, Ex-Situ Treatment Conclusions subsection, first paragraph in subsection, page 2-55	Editorial	<p>Comment is made with respect to following text: "In addition, several ancillary process options under the dewatering technology such as <u>in-barge dewatering, lagoon dewatering, geotextile tube dewatering, mechanical dewatering using filter presses,</u> and dewatering using chemically absorbent reagents..."</p> <p>This is confusing because I don't recall all of these being discussed in sufficient detail to be now called out as process options to be carried forward. For instance, lagoon dewatering is only mentioned in passing.</p>	<p>Additional language discussing all process options will be added to the text of Section 2.4.</p>	
Figures						
110	Five Tribes	Figure 2.4-11	Editorial	<p>Please add a notation on the figure that only the T4 CDF is carried forward in the FS.</p>	<p>A notation will be added to the figure.</p>	
Tables						

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
111	DEQ	Table 2.2-13, RAO 2	RAO 2 PRGs Target Levels Background	<p>1. Replace the column header Surface Water Target Level with Surface and Groundwater Bioaccumulation PRGs. The values listed here are AWQC ARARs and should not be considered “target levels”. They are applicable to both transition zone groundwater (pore water) and surface water.</p> <p>2. The values shown for sediment PRGs are now risk based, replacing background levels using in previous tables. Our understanding is that background levels will be used as PRGs for chemicals with risk-based values below background.</p> <p>3. The surface water target level of 0.0018 ug/L is the organism only AWQC for individual cPAHs. AWQC are provided for individual cPAHs without converting to benzo[a]pyrene equivalents. The scientific basis for using BaP equivalents has been established for decades, although AWQC do not take this into account. AWQC are ARARs, so we may need to include them without modification.</p> <p>4. According to FS Appendix A-1, Table 1, RAO 2 the target tissue level for arsenic should 0.00067 mg/kg, not 0.001 mg/kg.</p> <p>5. The organism only AWQC for 1,2-diclorobenzene is 130 ug/L.</p> <p>6. Appendix A-1 shows RAO 2 sediment PRG for hexachlorobenzene calculated from target tissue level of 0.6 ug/kg using BSAF. Our calculation using three species of fish gives a sediment PRG of about 0.08 ug/kg, not 0.04 ug/kg. Attempting to include smallmouth bass using an approximate BSAF value results in a PRG of about 0.03 or 0.04 ug/kg.</p> <p>7. How was a RAO 2 sediment PRG of 130 for pentachlorophenol derived without a target tissue level?</p> <p>8. Comparing with FS Appendix A-1, Table 1, RAO 2 the target tissue level for PBDE is 0.89 ug/kg based on infant exposure, not 26 ug/kg based on adult noncancer. An option for calculating sediment PRGs is to use the modeling for PCBs as a surrogate.</p>	<p>1. The column header will be changed to Surface Water PRGs (see response to Comment No. 59). The surface water values used here are organism only, which is not the ARAR. EPA disagrees that these values are applicable to groundwater.</p> <p>2. As noted in the response to Comment No. 70, EPA will be revising Section 2.2.4 to discuss and include background in more detail. Background will be factored into the PRG summary tables (Table 2.2-13 and 2.2-14).</p> <p>3. EPA agrees with the comment. Please note that the water value used for cPAHs in this RAO is not the ARAR. A footnote will be added that explains that this value applies to each carcinogenic PAH.</p> <p>4. The value 0.00067 mg/kg is shown in Appendix A-1, Table 1. This was an artifact of rounding.</p> <p>5. Agreed.</p> <p>6. EPA will confirm the value.</p> <p>7. The target tissue level for pentachlorophenol is 2.5 µg/kg.</p> <p>8. EPA agrees that the value in this table is incorrect and the target tissue level should be 0.89 µg/kg. EPA will consider development of a sediment PRG.</p>	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
112	DEQ	Table 2.2-13, RAO 3	PRGs based on Tap Water ARARs RAO 3 PRGs	<p>1. Surface water PRGs should be based on contaminants that exceed risk criteria as determined in the BHHRA and ARARs. Tap water PRGs are not ARARs.</p> <p>2. Values for DDX, manganese and O-xylene should be dropped as they are based on tap water PRGs and were not identified in BHHRA as exceeding risk criteria for this drinking water pathway.</p> <p>3. The value listed for perchlorate is based on a 2008 EPA interim drinking water health advisory and is not an MCL as noted in Table 2.2-14 and should be dropped from this PRG list as it also was not identified in the BHHRA for this pathway.</p> <p>4. The MCL for 1,1-DCE is 7 ug/L, not 2.4.</p>	<p>1. The site is listed as the river and the sources to the river. Since the risk assessment didn't evaluate the sources to the river, EPA is including PRGs for surface water media to ensure that the remedy is protective. The risk assessment concluded that there is unacceptable risk at the site; thus, ARARs apply. The language of the RAO has been modified and EPA is applying the HH AWQC ARAR (organism + ingestion) to this RAO in addition to the MCLs and tap water RSLs. EPA agrees that the tap water PRGs are not ARARs and never implied that they were ARARs.</p> <p>2. See response to Comment No. 112, Item 1.</p> <p>3. EPA agrees that the value for perchlorate is based on a 2008 EPA interim drinking water health advisory and is not an MCL. EPA will instead use the RSL value of 11 µg/L in Table 2.2-13 and will change the basis code in Table 2.2-14 to R2. See response to Comment No. 112, Item 1.</p> <p>4. Agreed. EPA will correct the table.</p>	
113	DEQ	Table 2.2-13, RAO 4	PRGs based on Tap Water ARARs Consumption Pathway RAO 4 PRGs	<p>1. Groundwater PRGs should be based on contaminants that exceed risk criteria as determined in the BHHRA and ARARs. Tap water PRGs are not ARARs.</p> <p>2. Values for DDX, manganese and O-xylene should be dropped as they are based on tap water PRGs and were not identified in BHHRA as exceeding risk criteria for this pathway.</p> <p>3. The value listed for perchlorate is based on a 2008 EPA interim drinking water health advisory and is not an MCL as noted in Table 2.2-14 and should be dropped from this PRG list as it also was not identified in the BHHRA for this pathway.</p> <p>4. The MCL for 1,1-DCE is 7 ug/L, not 2.4.</p> <p>5. Page 2-16 discussion of RAO 4 notes that this RAO also addresses indirect exposure to contaminated groundwater through fish and shellfish consumption. The numerical PRGs identified for this RAO do not address this exposure pathway. See comment on RAO 2.</p>	<p>1. See response to Comment No. 112, Item 1.</p> <p>2. See response to Comment No. 112, Item 1.</p> <p>3. See response to Comment No. 112, Item 3.</p> <p>4. See response to Comment No. 112, Item 4.</p> <p>5. See response to Comment No. 59.</p>	
114	DEQ	Table 2.2-13, RAO 6	Target Levels	<p>1. Replace the column header Surface Water Target Level with Surface and Groundwater Bioaccumulation PRGs. The values listed here are AWQC ARARs and should not be considered "target levels". They are applicable to both transition zone groundwater (pore water) and surface water.</p>	<p>See response to Comment No. 25 and Comment No. 111, item 1.</p>	

No.	Commentator	Section/Reference	Comment Issue	Comment	Response	
115	DEQ	Table 2.2-14	Editorial	<p>1. Change header under RAO 2 and RAO 6 to reflect RAO 2 comment 1 for Table 2.2-13.</p> <p>2. Add reference for Dioxin/Furan under RAO 6 surface water.</p> <p>3. Strike the RAO 2 reference for cyanide in water as no value is listed in Table 2.2-13.</p> <p>4. The reference for cyanide for RAO 3 and RAO 4 should be the same.</p> <p>5. The reference for perchlorate under RAO 3 and RAO 4 is not correct as there is no MCL for perchlorate.</p>	<p>1. See response to Comment No. 112, Item 1.</p> <p>2. A reference will be added. It is the same reference as noted for surface water in RAO 7.</p> <p>3. The cyanide reference in Table 2.2-14 will be removed.</p> <p>4. The reference will be corrected to “A2” for both RAO 3 and RAO 4.</p> <p>5. See response to Comment No. 112, Item 3.</p>	
116	Yakama	Table 2.4-2 and Table 2.4-3	MNR vs. EMNR Criteria	The Evaluation Criteria for Sediment Grain Size differs between these two tables (50% and 40%, respectively). Please provide an explanation for the difference between these criteria.	A total of 50% fines was used for MNR and then reduced somewhat for EMNR because we are not relying solely on natural recovery for EMNR. The basis is that percent fines equal to 50% or greater is indicative of stable sediments amenable to EMNR or MNR. This criteria is not necessary for the screening of technologies in this section of the FS. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.	
117	Yakama	Table 2.4-2 and Table 2.4-3	MNR vs. EMNR Criteria	The Surface to Subsurface Concentration Ratio is presented as 1.0; however, the text presents a Subsurface to Surface ratio of 2 which would make this value 0.5. Also, the value should include an equal to or less than sign. The expression of this ratio should be consistent in the table.	This criteria is not necessary for the screening of technologies in this section of the FS. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.	
118	Five Tribes	Table 2.4-4	Editorial	In this table, eliminate “>” in 40% fines and “>” in 1.0 surface to subsurface ratio. These signs were not used for the MNR or EMNR tables, and it’s confusing because >40% supports in-situ treatment, and >1.0 surface to subsurface ratio does not support in-situ treatment (i.e., <1.0 would support in situ treatment). Or include signs for all tables where relevant. Also, in the “Basis” column of this and the other tables, consider wording in terms of which direction would support the technology, not a mix of which would support and which would not support.	This criteria is not necessary for the screening of technologies in this section of the FS. This is one of several criteria used to screen for the best technology to apply in specific environmental conditions of the river, which occurs in Section 3 of the FS. EPA will modify this language to be less specific and more general.	